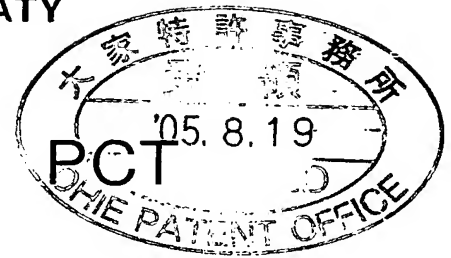


PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY



To:

see form PCT/ISA/220

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY (PCT Rule 43bis.1)

Date of mailing

(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference
see form PCT/ISA/220

FOR FURTHER ACTION

See paragraph 2 below

International application No.
PCT/JP2004/008157

International filing date (day/month/year)
04.06.2004

Priority date (day/month/year)
05.06.2003

International Patent Classification (IPC) or both national classification and IPC
H01M4/58, H01M8/02, C01B31/02, C01B31/04

Applicant
SHOWA DENKO K.K.

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA"). However, this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of three months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA:



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WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

10/559615
IAP9 Rec'd PCT/PTO 02 DEC 2005
International application No.
PCT/JP2004/008157

Box No. I Basis of the opinion

1. With regard to the **language**, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.
 - ☐ This opinion has been established on the basis of a translation from the original language into the following language , which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).
2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
 - a. type of material:
 - ☐ a sequence listing
 - ☐ table(s) related to the sequence listing
 - b. format of material:
 - ☐ in written format
 - ☐ in computer readable form
 - c. time of filing/furnishing:
 - ☐ contained in the international application as filed.
 - ☐ filed together with the international application in computer readable form.
 - ☐ furnished subsequently to this Authority for the purposes of search.
3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.
PCT/JP2004/008157

Box No. V Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	1-32
	No: Claims	
Inventive step (IS)	Yes: Claims	1-32
	No: Claims	
Industrial applicability (IA)	Yes: Claims	1-32
	No: Claims	

2. Citations and explanations

see separate sheet

Re Item V

**Reasoned statement with regard to novelty, inventive step or industrial applicability;
citations and explanations supporting such statement**

Reference is made to the following document:

D1: US 5 919 589

1. Novelty - Article 33(2) PCT

A carbon material for forming a battery electrode, comprising carbon powder having a homogeneous structure which is produced by causing an organic compound, serving as a raw material of a polymer, to deposit onto and/or permeate into carbonaceous particles, and subsequently polymerizing the organic compound, followed by thermal treatment at a temperature of 1800 to 3300°C, has not been disclosed in the prior art. Therefore the subject-matter of claim 1 is new (Article 33(2) PCT).

A method for producing a carbon material for forming a battery electrode containing carbon powder having a homogeneous structure, comprising a step of treating carbonaceous particles with an organic compound serving as a raw material of a polymer or a solution of the organic compound, to thereby cause the organic compound to deposit onto and/or permeate into the carbonaceous particles; a step of polymerizing the organic compound; and a step of thermally treating the resultant product at a temperature of 1800 to 3300°C, has not been disclosed in the prior art. Therefore the subject-matter of claim 24 is new (Article 33(2) PCT).

A method for producing a carbon material for forming a battery electrode containing carbon powder having a homogeneous structure and carbon fiber, comprising a step of treating carbonaceous particles with a mixture of an organic compound serving as a raw material of a polymer and carbon fiber having a filament diameter of 2 to 1,000 nm or with a solution of the mixture, to thereby cause the organic compound to deposit onto and/or permeate into the carbonaceous particles and cause the carbon fiber to adhere to the particles; a step of polymerizing the organic compound; and a step of thermally treating the resultant product at a temperature of 1800 to 3300°C C, wherein at least a portion of the carbon fiber is deposited onto the surface of the carbon powder, has not been disclosed in the prior art. Therefore the subject-matter of claim 25 is new (Article 33(2) PCT).

2. Inventive step - Article 33(3) PCT

Document D1 = US 5 919 589, which is considered to represent the closest prior art, discloses a carbon material for forming a battery electrode and a method of producing said carbon material which differ from the subject-matter of claims 1, 24 and 25 in that the heat treatment is performed at a temperature of 600 to 1500°C.

The problem to be solved is to provide an electrode material for producing a battery, the resultant battery exhibiting high discharging capacity comparable to that of a battery produced from graphite particles having high crystallinity, and exhibiting excellent coulombic efficiency, excellent cycle characteristics, and low irreversible capacity (see description, page 5, lines 1-6).

It is not obvious for the skilled person starting from document D1 to perform the thermal treatment at a temperature of 1800 to 3300°C, and arrive to the invention, because it is neither common knowledge nor suggested in the prior art.

Therefore the subject-matter of claims 1, 24 and 25 involves an inventive step (Article 33(3) PCT).

Claims 2-23 and 26-32 are dependent on claim 1 and as such also meet the requirements of the PCT with respect to novelty and inventive step.

3. Industrial applicability - Article 33(4) PCT

The subject-matter of claims 1-32 is industrially applicable. Therefore said claims meet the requirements of Article 33(4) PCT.